MEDICAL PROCEEDINGS

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EDITORIAL · REDAKSIONEEL

THE COMMISSION OF INQUIRY INTO THE HIGH COST OF MEDICAL SERVICES AND MEDICINES

Under the Chairmanship of Prof. H. W. Snyman (Dean of the Faculty of Medicine, University of Pretoria and Vice-President of the South African Medical Council) an 11-man Commission has been appointed* to investigate, consider and report on:

i. All factors which are responsible for the high cost of medical services and the manner by which it can be reduced;

ii. All factors which are responsible for the high cost of medicine and the manner by which it can be reduced; and

iii. Any related matter which may be deemed necessary by the Commission.

The other members of the Commission are:

Mr. R. S. Verster F.R.C.S. (Edin.) (*Surgeon, Bloemfontein*).

Prof. J. N. de Villiers (*Department of Obstetrics and Gynaecology, University of Stellenbosch*).

Prof. D. G. Steyn (*Department of Pharmacology, University of Pretoria*).

Dr. I. J. Louw (*Transvaal Provincial Administration*).

Dr. A. W. Lategan (*Director of the Bureau of Standards*).

Dr. M. D. Marais (*Economic Advisor to Sanlam*).

Mrs. J. A. Mostert (*Pretoria*).

Mr. O. H. B. Attwell (*Retired Magistrate, Durban*).

Mr. N. Hall.

Mr. G. R. Kempff (*Department of Health, Secretary-Member*).

In view of the increasing concern on the part of the public and responsible members of the profession to make provision for adequate medical care on a basis which the community

*Government Gazette, 15 January 1960, p. 18.

DIE KOMMISSIE VAN ONDERSOEK INSAKE DIE HOË KOSTE VAN MEDIESE DIENSTE EN MEDISYNE

Onder die voorsitterskap van prof. H. W. Snyman (Dekaan van die Fakulteit van Geneeskunde aan die Universiteit van Pretoria en Vise-President van die Suid-Afrikaanse Geneeskundige Raad) is 'n 11-man-kommissie aangestel* om ondersoek te doen na, oorweging te verleen aan, en verslag uit te bring oor:

i. Alle faktore wat verantwoordelik is vir die hoë koste van mediese dienste, en die maniere waarop dit verlaag kan word;

ii. Alle faktore wat verantwoordelik is vir die hoë koste van medisyne, en die maniere waarop dit verlaag kan word; en

iii. Alle aanverwante sake wat deur die Kommissie nodig geag mag word.

Die ander lede van die Kommissie is:

Mnr. R. S. Verster, F.R.C.S. (Edin.) (*Chirurg, Bloemfontein*).

Prof. J. N. de Villiers (*Departement Verloskunde en Ginekologie, Universiteit van Stellenbosch*).

Prof. D. G. Steyn (*Departement Farmakologie, Universiteit van Pretoria*).

Dr. I. J. Louw (*Transvaalse Provinsiale Administrasie*).

Dr. A. W. Lategan (*Direkteur van die Buro van Standaarde*).

Dr. M. D. Marais (*Ekonomiese Raadgewer van Sanlam*).

Mev. J. A. Mostert (*Pretoria*).

Mnr. O. H. B. Attwell (*Afgetrede Landdros, Durban*).

Mnr. N. Hall.

Mnr. G. R. Kempff (*Departement Gesondheid, Sekretaris-Lid*).

Met die oog op die steeds toenemende pogings aan die kant van die publiek en ver-

*Staatskoerant, 15 Januarie 1960, bl. 18.

can afford, this Commission is timely and welcome and should receive every assistance and co-operation from all quarters.

To a very considerable extent, the duties of the Commission are fact-finding, and this part of its activities should do much to dispel erroneous or ill-founded views which may be held about the cost of medical care.

We trust that the Commission will direct its mind to a consideration of the extent to which administrative overheads inflate the cost of medical care, whether this is provided by hospitals, nursing homes, insurance schemes, Medical Aid Societies or Sick Benefit Funds.

It will be interesting and important to know whether Parkinson's law* flourishes fruitfully in this field of activity. After a careful consideration of the position, the Commission may well consider it desirable to recommend a fixed limit to the percentage of the revenue which may be devoted to administrative expenses. This would provide a useful, built-in safeguard in the interests of efficiency and the maximal use of subscriptions or premiums for the purposes for which subscribers have paid them, viz. medical care.

In considering the cost of medical services, the commission may well also address itself to the extraordinary practice whereby the Medical Association imposes a uniformity of fees throughout the country in respect of Medical Aid Societies. This practice contradicts the facts of the situation. The costs of medical services vary in different parts of the country as do other commodities and it is, in our view, improper to inflate fees automatically in some parts of the country because adjustments, in the interests of fairness and to meet special circumstances, are required in other parts of the country.

At regular intervals we hear salvos let off about the high cost of drugs. We feel sure the Commission will make a determined attempt to establish the true facts.

It is idle to contemplate an approach to this matter on the basis of the chemotherapy of 15 or 20 years ago. The drugs used in the treatment of pneumonia, for example, were relatively ineffective 2 or 3 decades back. Drug treatment for this, as for many other conditions, was supplemented by bed-rest and adequate nursing—long and expensive in terms of bed occupancy and skilled professional manpower.

*'Work expands so as to fill the time available for its completion.' The staff of an establishment increases inexorably, whether the amount of work to be done remains the same, increases or diminishes.—*Editor.*

antwoordelike lede van die professie om voorsiening vir doeltreffende mediese behandeling te maak op 'n grondslag wat deur die gemeenskap bekostig kan word, het die aanstelling van hierdie Kommissie net op die regte tydstip plaasgevind, en derhalwe behoort dit op die hulp en samewerking van almal te kan staatmaak.

Die Kommissie sal, in 'n baie groot mate, 'n feitekommissie wees, en hierdie deel van sy werk behoort veel by te dra tot die wegruiming van die verkeerde en ongegronde sienswyses oor die koste van mediese behandeling wat skynbaar deur sommige mense daarop nagehou word.

Ons vertrou dat die Kommissie sorgvuldig sal ingaan op die mate waarin die koste van mediese behandeling deur administrasie-uitgawes verhoog word, of daardie behandeling nou al deur hospitale, verpleeginrigtings, versekeringskemas, Mediese Onderstandsverenigings of Siektevoordelefondse verskaf word.

Dit sal nogal interessant en belangrik wees om vas te stel of Parkinson se wet* welig in hierdie besondere sfeer van aktiwiteit gedy. Na 'n sorgvuldige oorweging van die posisie kan die Kommissie dit bes moontlik wenslik ag om aan te beveel dat daar perke gestel moet word aan die persentasie van inkomste wat aan administrasiekoste bestee word. Dit sal 'n nuttige, ingeboude beveiligingsmiddel beskikbaar stel om doeltreffendheid in die hand te werk, en om te verseker dat subskripsies of premies hoofsaaklik gebruik word vir die doel waarvoor hulle deur lede bygedra is, nl. mediese behandeling.

By die oorweging van die koste van mediese dienste kan die Kommissie gerus ook ingaan op die buitengewone stap van die Mediese Vereniging wat eenvormige doktersgelde vir die hele land vasgestel het vir sover dit Mediese Onderstandsverenigings betref. Dit is 'n regstreekse weerspreking van die feite van die toestand. Die koste van mediese dienste verskil in verskillende dele van die land, net soos die koste van ander artikels verskil, en volgens ons mening is dit nie reg om doktersgelde outomaties in sommige dele van die land te verhoog net omdat aanpassings, in die belang van billikheid en om sekere omstandighede die hoof te bied, in ander dele van die land nodig geword het nie.

By gereelde tussenpose word daar ook 'n groot bohaai gemaak oor die hoë koste van medisyne. Ons is oortuig daarvan dat die Kommissie 'n kragdadige poging gaan aanwend om die ware feite aan die lig te bring.

Dit sou nutteloos wees om hierdie aangeleentheid te benader op grondslag van die chemoterapie van 15 of 20 jaar gelede.

*'Werk dy uit om die tyd wat vir die voltooiing daarvan beskikbaar is, te vul.' Die personeel van 'n inrigting vermeerder onverbiddelik, of die hoeveelheid werk wat gedoen moet word nou al onveranderd bly, toeneem of afneem.—*Redakteur.*

To-day the situation has been altered radically by the discovery and development of specific drugs effective against particular diseases. In an astonishingly vast percentage of cases, the patient can be cured and returned to the community in a fraction of the time taken before. This means a short stay in hospital and therefore an enormous increase in the patient turnover in hospital beds as well as an incredible relief on the strain of nursing and medical care generally.

The remarkable chemotherapeutic developments which have occurred within the last 20 years, have multiplied the capacity of our hospitals without the laying of a single brick and without the investment of any capital sum. These are important reasons why it has been possible to cope with the problems of caring for our community. As is well known, in the case of tuberculosis modern drugs have reduced the need for beds and even closed down hospitals; and venereology has disappeared as a speciality. The significance of these facts must be evaluated in an analysis of the cost of drugs.

The highly adequate chemotherapy made available by pharmaceutical organizations implies considerable economic investment in research on a scale which is not possible for Universities and research institutes. This is an important factor in the cost of medicines and should be borne in mind when an impartial analysis is undertaken.

It may well be that the Commission will also think it necessary to investigate the cost structure of medicines from the stage of manufacture to the retail point at which they reach the patient. If such an investigation were to reveal excessive profits, appropriate recommendations will no doubt be made and, if the facts justify them, the recommendations will meet with general approval.

The Commission clearly faces a very considerable task and the scope and its activities will embrace much more than the few points we have referred to.

The Commission is asked to report on the manner in which the cost of medical services and drugs can be reduced. One obvious solution is to encourage the community to insure itself against the risks of illness. Prepaid medical care is the answer to this aspect of the problem provided, however, it is established in a way which preserves the pattern of private practice as we know it in South Africa, maintains our high professional standards and, in addition, guarantees the independence and autonomy of the medical profession, which at all times must be able to determine its own destiny.

Twee of 3 dekades gelede was die middels wat, byvoorbeeld, vir die behandeling van longontsteking gebruik is, betreklik ondoeltreffend. Die toediening van medisyne vir hierdie sowel as vir baie ander kwale is aangevul deur rus in die bed en doeltreffende verpleging—'n lang en duur proses, in terme van bedlêendheid en ervare professionele arbeidskragte.

Vandag het die toestand radikaal verander ten gevolge van die ontdekking en ontwikkeling van spesifieke middels wat doeltreffend teen besondere siektes is. In 'n verbasende groot aantal gevalle kan die pasiënt gesond gemaak word en na die gemeenskap terugkeer in net 'n baie klein deeltjie van die tyd wat vroeër hiervoor nodig was. Dit beteken 'n kort verblyf in die hospitaal en derhalwe 'n enorme vermeerdering van die aantal pasiënte wat in enige besondere hospitaal behandel kan word, om nie eens te praat van die byna ongelooflike vermindering van die spanning wat deur verpleegwerk en mediese versorging in die algemeen meegebring word nie.

Die merkwaardige chemoterapeutiese ontwikkelinge van die afgelope 20 jaar het die kapasiteit van ons hospitale oneindig verhoog dat dit vir ons nodig was om 'n enkele baksteen te lê of enige kapitaal daaraan te bestee. Hierdie belangrike faktore het dit moontlik gemaak om die probleme verbonde aan die mediese versorging van die lede van ons gemeenskap die hoof te bied. Dit is 'n bekende feit dat, in die geval van tuberkulose, moderne geneesmiddels die behoefte aan beddens aansienlik verminder en dit selfs moontlik gemaak het om sekere hospitale heeltemal te sluit; en venereologie het as spesialiteit verdwyn. Die betekenisvolheid van hierdie feite behoort in ag geneem te word tydens enige ontleding van die koste van medisyne.

Die hoogs doeltreffende chemoterapie wat deur farmaseutiese organisasies beskikbaar gestel word, dui op aansienlike ekonomiese beleggings in navorsing—op 'n skaal wat bo die vuurmaakplek van universiteite en navorsingsinrigtings is. Dit is 'n belangrike faktor in die koste van medisyne, en moet in gedagte gehou word by enige onpartydige ontleding.

Dit kan ook wees dat die Kommissie dit nodig sal ag om in te gaan op die kostestruktuur van medisyne vanaf die vervaardigingstadium tot by die kleinhandelsplek waar die geneesmiddel die pasiënt bereik. As so 'n ondersoek aan die lig bring dat oormatige winste gemaak word, sal geskikte aanbevelings sonder die minste twyfel gedoen word, en, as hulle deur feite gestaaf kan word, sal sodanige aanbevelings beslis algemene byval vind.

Dis duidelik dat die Kommissie voor 'n geweldige taak staan, en die bestek van sy ondersoek sal ongetwyfeld baie meer insluit as die paar punte wat ons hier genoem het.

Die Kommissie is gevra om verslag uit te bring oor die manier waarop die koste van mediese dienste verminder kan word. Een voor die hand liggende oplossing is natuurlik om die lede van die publiek aan te moedig om hulle teen die gevare van siekte te laat verseker. Vooruitbetaalde mediese behandeling is die antwoord op hierdie aspek van die probleem, met dien verstande, egter, dat dit bewerkstellig word op 'n wyse wat die patroon van private praktyk, soos ons dit ken, in stand sal hou, dat dit geen afbreuk aan ons hoë professionele standaarde sal doen nie, en dat dit daarbenewens ook die onafhanklikheid en outonomie van die mediese professie (wat te alle tye oor sy eie lotgevalle moet kan beslis) sal waarborg.

THE USE, MISUSE AND ABUSE OF ANTIBIOTICS

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Antibiotics are like the yeast it grows in,
A great yellow Mandarin
With urbanity of manner
And unconsciousness of sin.
(*With apologies to G. K. Chesterton*)

The discovery of antibiotics is without doubt one of the greatest contributions to medicine during the present century. These chemical substances (products of synthesis and of mould and fungal metabolism) have revolutionized the treatment and prognosis of most of the infective illnesses of mankind, to an extent undreamed of twenty years ago. Much misuse of these remarkable drugs has led in some instances to a limitation in their spheres of action, and the search continues in the world's laboratories for newer and more potent therapeutic substances.

Recently progress in antibiotic therapy has barely been maintained, and in spite of the discovery of newer and 'broader spectrum' antibiotics, there have been many and serious set-backs. Gone are the days when the results of treatment could be predicted with some certainty once the infecting organism was known, and for any particular disease or pathogen the appropriate antibiotic could be ascertained by reference to a chart, which displayed against each an encouraging number of + signs, to indicate an ascending order of excellence.

We are now faced with the increasing ability on the part of many organisms to develop resistance to antibiotics, and on the part of the host to develop sensitivity and toxic reactions. More than ever before, it is necessary to exercise discipline in the use of these new weapons lest, by abusing them, their beneficial effects are destroyed for all time or the lives of patients are endangered. A rational use of these agents must, as far as possible, be based on determining the sensitivity of the organism, and exhibiting the most appropriate and least toxic antibiotics in the correct dosage, and for the shortest possible time.

Each antibiotic appears to act by interfering with some stage of the metabolic cycle of the organism against which it is effective. In some cases it may be by preventing the utilization of the amino acids and synthesis of proteins, interfering with the metabolism of fats and esters, the utilization of ammonia and oxidation of glycine and glutamic acid, or any other complicated chemical processes. In certain instances the interference may be bacteriçidal, and it is believed that penicillin, streptomycin, erythromycin, polymixin, bacitracin, viomycin and neomycin act in this way. The effect of other types of metabolic interference may be only bacteriostatic, slowing up the speed of bacterial multiplication so that the body defences are able to deal with the invading organism more quickly and effectively. Many of the other antibiotics probably act in this way.

Resistance to antibiotics may be natural or acquired. Even before the widespread and indiscriminate use of antibiotics, colonies of bacteria were found to be resistant to antibiotics *in vitro,* particularly to penicillin, and in some instances it has been suggested that the increasing incidence of resistant strains is due to the multiplication of those naturally resistant at the expense of the sensitive ones which have been eliminated by appropriate therapy. Whether this is so or not, there is no doubt that bacteria can develop resistance, often very rapidly, both *in vitro* and *in vivo;* the resistance occurring *in vitro* is often reversible, while that developing *in vivo* is usually permanent.

Bacteria differ in the ways in which they become resistant. Some produce substances which render the antibiotics inactive, whilst others develop alternative metabolic pathways to replace those which have been blocked by the antibiotic. This latter process may on occasions be extended or be carried to extreme lengths, and the organism may grow more profusely in the presence of the antibiotic, and even become dependent upon it. There is no doubt that, in clinical practice, acquired resistance constitutes a major problem; particularly is this so in special units where secondary infection with resistant staphylococci has sometimes enforced temporary closure of wards.

In attempts to prevent or counteract resistance, antibiotics are often used in combination, e.g. sulphonamides and penicillin in respiratory infection; streptomycin and PAS or isoniazid in tuberculosis; streptomycin and penicillin in bacterial endocarditis due to *Strepto-*

coccus faecalis; penicillin, Chloromycetin and a sulphonamide in pyogenic meningitis, or polymixin and tetracycline in pyocyaneus infections. The success of such combinations is thought to be due to one antibiotic blocking an alternative metabolic pathway, which could be developed by the organism in response to another antibiotic. It sometimes happens that two or more antibiotics used together, give and produce an effect greater than could be accounted for by the sum of the individual effects. This synergism is described by Garrod as 'a large increase in the rate of early bactericidal action, and the rate of cure of infections beyond that obtained by a simple additive effect of the agents'. This synergistic effect is well seen in the combination of bactericidals but with bacteriostatics the result is probably only additive. A classic example of a bactericidal-bacteriostatic combination which is synergistic, is the mixture of chloramphenicol and diphydrostreptomycin, which has proved so effective in gastro-intestinal infections.

Combinations of bactericidal and bacteriostatic agents should not be too readily used, as an antagonistic effect is occasionally seen. This is becoming more common nowadays, especially if the organism is fully sensitive to one group. That this is not always so, is borne out by the clinical observation that very large doses of penicillin and Aureomycin have apparently succeeded in controlling severe infections which had not previously responded to either drug separately. Sometimes cross-resistance develops with similar antibiotics; if an organism develops resistance to Aureomycin, it may in certain cases become resistant to Terramycin i.e. if cross-resistance develops. Similarly, resistance to erythromycin and carbomycin may develop simultaneously. It has been reported that resistance to one group of antibiotics may be lessened by the administration of another group to which the organism also becomes resistant but, in doing so, again becomes sensitive to the first group.

With increasing experience in the use of these drugs, it is becoming more apparent that unpleasant reactions may occasionally be encountered and, in some instances, the frequency seems to be increasing. The reactions may be directly toxic and manifest themselves on the first exhibition of the drug, or they may result from sensitization of the tissues due to previous administration and occur during a subsequent course of treatment with the antibiotic. Sensitivity to penicillin in previously untreated cases, and to a greater degree in treated cases, has been known for a long time, and can be ascertained by intradermal tests. In these cases, fever and skin manifestations were usually at first the only results and responded rapidly to withdrawal of penicillin and administration of antihistamines. It came, therefore, as an unpleasant surprise to learn that more serious and even fatal reactions could occur. Cases have been reported where an adult has died after an injection of 300,000 units of crystalline penicillin; these patients may have been sensitized to a course of penicillin and experienced a toxic reaction previously. On other occasions, patients may develop serum sickness following penicillin; and the case of anaphylactic shock which may cause death, should also be remembered. Judging from the correspondence in the medical literature, these reactions seem by no means uncommon.

It is, therefore, imperative upon the doctor to make careful enquiry concerning previous penicillin reactions, testing for sensitivity (particularly in patients known to suffer from asthma and other allergic conditions). The prophylactic and therapeutic value of antihistamines is emphasized.

In passing, it must be pointed out that the combination of procaine and penicillin produces an entirely new physical substance which probably has different actions from the separate constituents. These substances, though they may be harmless individually, may together produce drastic side effects.

Toxic reactions continue to be associated with streptomycin, especially vestibulitis, nerve deafness and optic atrophy, and on this account it is recommended that dihydrostreptomycin should be avoided and streptomycin used diligently. While it is probably true that a higher incidence of these cases occurs with streptomycin, they occasionally follow the use of the other salts of streptomycin, particularly during intrathecal treatment of tuberculous meningitis. At present it would appear that deafness would be encountered from time to time in adequately treated cases of all types of tuberculosis, regardless of the scheme of dosage, although the tendency is to give smaller doses at increasing intervals wherever possible.

Skin sensitization to penicillin and streptomycin has assumed serious proportions among nursing staff, doctors and dispensers. The degree of sensitivity varies, but affects mainly the exposed skin of the hands, arms, face, eyes and neck, and many of the affected personnel may be unable to handle the particular sensitizing drug again, or even to enter wards or

enclosed places where the antibiotics are being used. In the latter case, the extreme degree of sensitivity appears to result from the effect of fine droplets of the drug being ejected as a spray when the syringes are filled, or of dried particles in the dust of the ward. The consequence of loss of skilled personnel under such conditions is a serious matter. The question of desensitization of these persons must then seriously be considered.

The occurrence of serious and fatal effects following the use of Chloromycetin is well known although rare.

When it was suggested in the U.S.A. (in 1949) that blood dyscrasias might be associated with the administration of Chloromycetin, the manufacturers co-operated with the Food and Drug Administration and the United States National Research Council to determine to what extent Chloromycetin was involved as the causative agent. It was subsequently estimated that the ratio of deaths to courses of Chloromycetin taken since the product had been introduced was of the order of 1 in 800,000.

The manufacturers themselves have always stressed that Chloromycetin, when used systemically, is intended for acute and serious infections, and should be avoided in prolonged or intermittent administration, particularly in chronic respiratory and urinary tract infections.

Apparently, haematological complications may arise in susceptible patients following small dosage, but this is even rarer, and the same hazard exists with many other drugs in common use.

Obviously, the only safeguard is (as with all antibiotics) the judicious use of Chloromycetin. Even then, these unfortunate incidents should not prevent its employment when it is clearly the drug best suited to the infection.

Tetracycline is known to produce gastro-intestinal reactions which may be more marked in females, and may develop more rapidly in cases previously treated with penicillin and streptomycin. Heartburn, nausea, epigastic pain, vomiting, vesiculo-papular eruptions of the mouth, with angular stomatitis and glossitis or 'black-tongue', peri-anal itching, pain, burning sensation with thickening or erythema of the anal skin and multiple superficial fissures, diarrhoea during and after treatment, ulceration of the colon and rectum with bleeding on defaecation, have all been seen. Tetracyclines have also given rise to peripheral neuritis. This has probably been due to interference with vitamin B group synthesis in the gut—an event which may also occur with certain infections where competing organisms deplete the intestinal flora. Idiosyncrasy to the drug has caused asthmatic attacks 10 minutes after administration, with a positive skin test. Other damage has also been described following the use of tetracyclines by oral or intravenous routes; photosensitivity has been known for some time, and where the drug has been given for several months to suppress chronic infection during the summer months, an acute inflammatory reaction with blistering and desquamation and subsequent thickening occurred in the skin of the face, arms and hands.

Prevention of gastro-intestinal symptoms may be partly achieved by giving vitamin B by mouth or parenterally. It is not advisable to give the drug with antacids, as these adsorb the drug and make it unavailable to the patient. It can be given with milk or preferably shortly *after* a light meal.

Superinfection is the term implied to infection by new and resistant organisms during antibiotic therapy. It is encountered in Burn and Skin Units when, as a result of cross-infection, Proteus, Aerogenes, Pseudomonas and resistant *B. coli* organisms are recovered from lesions. They are extremely difficult to eradicate as they are frequently unresponsive to every available antibiotic. A very severe and often fatal form of superinfection is acute staphylococcal enterocolitis during the administration of the tetracyclines, often a prophylactic measure to prevent post-operative infections. In this condition, which can occur without previous antibiotic treatment, it is thought that the normal alimentary organisms are inhibited (judged by their absence in cultures) and are replaced by coagulase-positive resistant staphylococci, the enterotoxin of which is responsible for the subsequent metabolic and circulatory failure. It is suggested that examination of the bacterial flora by simple daily slide examinations, may give adequate warning of the situation. Successful treatment of this condition has been carried out with the use of intravenous fluids, noradrenaline and the new cortisones, erythromycin or oleandomycin orally and intramuscularly and bacitracin. In addition to this, one can attempt to reintroduce normal bacterial flora into the gut.

In the same category can be included infection by *Candida albicans,* which is a normal commensal of the upper respiratory and alimentary tracts, and which is normally resistant to all antibiotics. Where the bacterial flora of the body are changed as a result of drug treatment, it is inevitable that these yeasts

should multiply, and to this is often ascribed some of the unpleasant side effects of these drugs. Moniliasis is rare in an aggravated form. Anal pruritus may be due to mixed yeasts and not necessarily monilia. True moniliasis may, however, occur with invasion of the tissues by the fungus after prolonged therapy with different antibiotics, and abscess formation and even septicaemia with metastatic lesions have occurred. It is difficult with such evidence not to suggest that the monilia was acting as a definite pathogen.

'The food that to him now is as luscious as locusts, shall be to him shortly as bitter as coloquintida'.
(*Othello*)

There is justice in the allegation that chemotherapy as practised in hospitals is now a communal concern. Doctors who administer a hospital would be fully justified in regarding this as a danger to public health, as they would a water supply polluted by a carrier of typhoid bacilli. If the medical staff of hospitals will not themselves plan how to use antibiotics wisely and safely, they should not complain if others examine what can be done to protect the public.

Penicillin and every other antibiotic can only be given on medical advice, and the patient should be under direct medical care. Hospital policy should be agreed on by the medical staff among themselves. Hospitals which have not even tried to formulate a policy in this matter have need to be visited and disturbed by the revered ghosts of Florence Nightingale and Lord Lister. However much these two may have appeared to differ in matters of interpretation, they agree in seeking to ensure that hospitals should do the sick no harm. We may go further, and insist that our hospitals must now desist from menacing healthy members of the general public. How many hospitals and how many patients would lose anything of value if we gave up the casual use of penicillin for, say, two years? If penicillin were only given to patients in hospitals who really needed it and if these were put into strict isolation while receiving it, might not some of the worst results of indiscriminate chemotherapy be eliminated? We cannot be certain of the results, but they could not be worse than at present, and they might reverse the hopeless drift towards real therapeutic frustration. Some action is clearly needed to restore the value of penicillin and, indeed, of all the other antibiotics. It is worth noting the evidence of Gillespie that resistance to other drugs was almost entirely confined to the penicillin-resistant strains of staphylococci.

The Royal Prince Alfred Hospital in Australia gives the following startling facts:

'Eighty-six cases of staphylococcal septicaemia were diagnosed in one hospital over a period of 7 years. Forty patients *were infected in hospital*, and 31 (77.5%) of them died. The infecting staphylococci belonged to only a few phage types; the infection started in 1952 and all followed surgery, intravenous therapy or the exhibition of cortisone. Forty-six patients acquired their infection outside hospital, and 19.3% died. Up to 1954, there was an average of 2 such cases each year, but the incidence rose notably in the 3 following years. This increased incidence was due almost entirely to infections with strains of phage type 80/81'.

It may readily be assumed from these figures that the incidence of staphylococcal infection in hospitals is probably world wide, and the startling figures that have been presented may well occur in our own midst.

In the past year there have been published in the *Lancet* 4 fairly long editorials and many shorter ones on the problems created by staphylococcal infections acquired in hospital, and they have also discussed at some length the related problems of inefficient sterilization and misused antibiotics. They ask whether they should risk boring their readers with a further article on the same subject, and they reply they have no option. Patients putting their lives in the hands of the profession are entitled to be protected from any avoidable ignorance or indifference. The time has not yet come when we can feel sure that they have such protection.

Lord Cohen's sub-committee on staphylococcal infections in hospitals will surely prove their point. 'Asepsis, properly understood and faithfully applied, is to be relied on. Antibiotics by themselves are unreliable, either for prevention or for treatment'.

Staphylococcal infections are particularly troublesome in surgical departments and maternity units, but no part of a hospital should be regarded as without risk or significance in the campaign to control infection. Adequate records and proper bacteriology are needed if we are not to deceive ourselves about the true extent of the problem. Constant vigilance is required to detect signs of infections in patients and staff, and to follow patients for long enough to ascertain their full history. The Ward Sister should keep a *Control of Infection Register*, which must be inspected regularly. Each hospital should appoint a sufficiently senior and fully interested member of its staff to act as a Control of Infection Officer, and a Control of Infection Committee must meet regularly to review the sepsis record.

Staphylococci are hardy and easily spread; sources of most trouble causing staphylococcal outbreaks are human tissues in which they are multiplying. These may be either in septic lesions or at healthy carrier sites. Hospital wards should not be overcrowded, or their staff so harried or hurried that they must adopt dangerous short-cuts to get through their work. This will be one of the biggest and hardest of all changes to secure in some hospitals.

Wounds should ideally be dressed in properly designed treatment rooms, and soiled dressings should be disposed of safely. Controlled ventilation, designed and installed by personnel properly briefed and knowledgeable, is an important means of reducing air-borne contamination. There is insufficient evidence of the value of irradiation of air by ultra-violet light as a means of reducing its bacterial content. Patients and members of staff with septic lesions should be nursed in single rooms and by the best isolation techniques. Blankets should be regularly disinfected, and the mattresses should likewise be disinfected regularly, or protected by an impermeable cover. Washing and bathing should be made easy and regular matters for both staff and patients, by the provision of sufficient facilities. Sterilization should be made effective. Control of individual outbreaks may call for a variety of additional methods of investigation and prevention. Examination of throat and nasal swabs taken from hospital nursing staff may well reveal carriers harbouring resistant organisms.

Hospital Boards are urged to take an interest in such matters and to ensure the necessary links with the local authorities between different hospitals and general practitioners and with the central authorities. Good operating theatre practices and rules of isolation, nursing and wound dressing should be planned carefully.

All members of the hospital team must make themselves alive to their personal duties. In hospitals where the staff are not yet on the alert, somebody should write and ask for a Control of Infection Committee to be set up, and somebody with sufficient zeal or authority must see that the committee does not become simply 'another producer of paper'.

In the United Kingdom, the United States and here, the indiscriminate use of antibiotics is condemned by many. We must understand how greatly our uncritical use of them has contributed to our present difficulties; and we must examine soberly what we may and may not expect of some of the newer drugs now coming on to the market.

During the last 12 years some 3,500 antibiotics have been isolated. Seventeen or more of these are now in commercial production and at the *Third Annual Symposium on Antibiotics* held in Washington in November 1956, a further 18 were under review. Since then there have been many more discoveries. For the clinician, this embarrassment of riches has raised almost as many problems as it has solved.

1. Which is the antibiotic of choice in any given case? This includes a consideration of bacterial sensitivity to the therapeutic agent to be employed and, in certain circumstances, it will require laboratory investigation as well.

2. What is the toxicity of a given antibiotic?

3. Perhaps most important of all, what effect is the indiscriminate use of that antibiotic having upon the natural immunity processes of our patients?

If there is a complaint that this contribution will lay undue emphasis upon the harmful effects of these potent weapons in the fight against infection, it is felt that such an emphasis is clearly indicated at present, if only to counteract the over-enthusiastic claims which tend to be made for each new antibiotic as it appears on the therapeutic horizon. There is no difficulty about the clear-cut indications for antibiotics. A patient with pneumonia, typhoid, subacute bacterial endocarditis, meningitis or septicaemia, must be given the appropriate antibiotic forthwith and in full dosage. But what justification is there for the indiscriminate use of antibiotics in those minor maladies and infections of life, to which we are all subject? Have we forgotten that nature can deal with these infections, and deal with them more effectively though possibly less expeditiously than we can do with the aid of antibiotics?

The antibiotics may, and often do, knock out the infecting organism very rapidly but, in doing so, they may deprive the patient of immunity from subsequent infections, which he might have acquired had the infection been allowed to run its course. This is not true as a general rule, but only in certain cases.

However, by wholesale and uncalled-for use of antibiotics, the practitioner is exposing his patients to the not inconsiderable risk of making them vulnerable to a subsequent and more serious infection as a result of having either induced hypersensitivity to the antibiotic or rendered the causative organism resistant to

the antibiotic. It is a matter for concern that in the United States some 40% of prescriptions are for antibiotics, and there can be little doubt that on the Continent and elsewhere, figures are of similar order.

The first principle of therapeutics is: *Nolle nocere primum nolle nocere.* 'Do no harm', 'to be unwilling to do harm'. This is the principle on which rests public confidence in the doctor. This first principle has stood firm throughout the centuries; only the connotation has changed. But this change, largely the result of the many outstanding advances in pharmacology which we have seen in our time, has been so great as to nearly obscure the principle. The lines of Pope,

> 'Be not the first by whom the new are tried,
> Nor yet the last to lay the old aside'.

are still sound advice for the practising doctor, but the timing with some has changed to: 'Better hurry up and use the new drug before it is replaced by a still better one' or, in a hypercritical mood, 'Better hurry up to use the new drug while it is still thought to be effective'.

Today the availability of active drugs with specific therapeutic action enables the doctor to cure many diseases promptly and relieve symptoms more effectively. This fact, coupled with his increasing understanding of the disease, enables him to deal more readily with the emotional, social and economic aspects of illness. Today doctors are less dependent upon faith and the polypharmacy of their fathers.

We should be critical in our approach regarding new products, and we should turn over in our minds the following few thoughts. Is there a need for the proposed product? Does the product contribute something new? Is it an improvement over existing products? Has its clinical evaluation been proven? What is the cost of the drug? And how long is it necessary to continue using the drug before obtaining any satisfactory response?

However, we should not lose sight of the fact that without the pharmaceuticals invented and prepared by the drug houses, it would have been impossible to achieve the promising results obtained. These pharmaceuticals again, it must be believed, were not achieved by accident, and a great deal of time, money and research has gone into the production of each antibiotic. The pharmaceutical industry no doubt appreciate the great responsibility they have toward the medical profession and also to the public at large.

If one can quote Sir Robert Hutchinson in his *Modern Litany of Sophocles*, the following words are truly significant:

> 'From inability to let well alone, from too much zeal for the new, and contempt for what is old, from putting knowledge before wisdom, science before art, cleverness before common sense, from treating patients as cases, and from making the cure of the disease more grievous than the endurance of the same, Good Lord, deliver us'.

A COMPARATIVE STUDY BETWEEN EUROPEANS AND AFRICANS

IN THE MINING INDUSTRY OF NORTHERN RHODESIA

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In this paper the results are recorded of a comparative study between European and African recruits and miners in the mining industry (copper, lead and zinc) of Northern Rhodesia in respect of their physique, chest configuration, radiological appearance of the lung fields and maximum voluntary ventilation.

Oosthuizen[2] has described certain differences in the radiological appearances between the lung fields of Europeans and Africans in South Africa. He considers that the following features were important in differentiating the two racial groups:

In the African the diaphragm is flatter in appearance and higher in position, and the costophrenic angles are less acute. The cardiac silhouette is more transverse in position, creating the erroneous impression that the heart as shown by the transverse diameter is larger than in the European. The pulmonary striations are often more pronounced and tend to follow a more horizontal course as com-

pared with the European, creating the erroneous impression of abnormal accentuation of the linear lung markings and an appearance of false nodulation, as the result of vessels being seen end on. In the age group over 40, a 'gritty' appearance is often seen in persons with no industrial history of work in a dusty atmosphere. The thorax with the reduced superior inferior diameter assumes a rather square shape which, combined with the transverse heart and accentuated pulmonary striations, is rather characteristic of a large percentage of cases.

These differences have not been observed here. At the suggestion of Meiklejohn[3] in his review of Oosthuizen's paper, it was decided to make a comparative study of the two racial groups in Northern Rhodesia.

At this Bureau about 6,000 Europeans and 35,000 Africans are clinically and radiologically examined each year. Chest exposures are made on full-size films (15″ x 12″, 17″ x 14″). In the last decade one of us (R. P.) has seen over a quarter of a million African chest X-rays and over a hundred thousand European chest X-rays. As a result there has been considerable opportunity for observing any differences that may exist in the radiological appearance of the lung fields of the two races, and this paper is based on such observations and on recent detailed studies.

The investigation was extended to include a comparison of the physical measurements and the M.V.V.'s of the two racial groups. The Europeans attending the Pneumoconiosis Medical Bureau for pre-employment (initial) and annual periodical examination are mainly British or South African, with a minority from the mid-European countries and the American continent. The Africans are representative of most of the tribes of Northern Rhodesia and Nyasaland with a minority from Tanganyika.

GENERAL OBSERVATIONS

The following observations have been made over the years on African and European recruits and miners of the scheduled mines of Northern Rhodesia. The African miners generally, and the recruits in particular, have preliminary instruction in how to 'take a deep breath and hold it' before attending the X-ray Department for chest X-ray. If this instruction is not given it is found that a proportion tend to make little or no inspiratory effort whatsoever, and the resultant film is usually at the mid-expiratory or expiratory phase with its associated high and flattened diaphragm, increased vascularity of the lung fields and broadened cardiac transverse diameter.

The main difference between the two racial groups in Northern Rhodesia is that the African is of much smaller stature and forms a more compact physical group than the European, which is shown by the standard deviation in Table 2. Proportionately he has a smaller thorax. In routine radiography of both races most Africans can be X-rayed on a 15″ x 12″ film, whereas most Europeans require a 17″ x 14″ film. Generally the radiological appearances of the lung fields of the European is similar to that of the African. The pulmonary vascular pattern is similar in both races, but the cardiac silhouette of the African, as judged by the transverse diameter, appears larger than that of the European. In the absence of dust exposure, accentuation of the pulmonary linear markings is no commoner in the African than in the European. The contours of the diaphragm in both races show a well defined convexity, the costophrenic angles being acute and again, in this respect, there is no difference between the two races. It has been observed, however, that the contour of the right diaphragm in the African is frequently divided into two, producing two arches, the inner arch being higher. This is a normal anatomical variation of the diaphragmatic contour and this antero-median elevation is presumably due to a developmental weakness of the muscle fibres.

Other developmental abnormalities such as cervical rib and spina bifida (cervical and thoracic) also occur more frequently in the African. In a series of 5,740 European and 15,700 African X-rays randomly chosen, there were 9 cases of cervical or thoracic spina bifida (1.57 per 1,000) in Europeans and 228 cases (14.52 per 1,000) in Africans. Cervical rib, either unilateral or bilateral, occurred in 11 (1.92 per 1,000) Europeans and in 48 (6.30 per 1,000) Africans. The occurrence of both these developmental abnormalities is significantly more common in the African. Rib malformations, including undeveloped first rib and bifid rib occurred in 77 Europeans (13.42 per 1,000) and in 193 Africans (12.30 per 1,000). In both races bifurcation of a rib occurred more frequently on the right side, as did undeveloped first rib. Apart from these differences and the difference in the size of the thorax, our observation in Northern Rhodesia is that there are no specific features which would enable one to differentiate between the chest X-rays of the two racial groups. In the African a 'small squat chest' is not commonly observed and is no commoner than in the European. An

apparent squatness of the chest, however, as judged by the chest X-ray, is more common in the African because of the poor inspiratory effort which he more often makes at chest X-ray. These general observations are supported by the detailed study.

DETAILED STUDY

In making any radiological comparison, especially where measurements are involved, it is essential that the groups to be compared are X-rayed under identical radiographic conditions, as chest X-rays are greatly influenced by the technique used. The phase of respiration at which a film is taken is probably the most influencing factor in chest radiography. Films taken in the expiratory and mid-expiratory phase show a reduced superior : inferior diameter with an increased transverse diameter of the heart. The vascular pattern, too, varies greatly with the phase of respiration. The degree of penetration also influences a chest film, under-penetrated films tending to produce a more accentuated vascular pattern.

In this investigation, and routinely at the Bureau, the radiographic technique for both races is the same. The X-ray units are 4 valve transformers of 90 kVp, 500 mA rating, with twin focus rotating anode tubes with 1 mm. and 2 mm. foci.

Radiographic technique is as follows:
Projection: Postero-anterior on full inspiration with tube centred on the 4th or 5th dorsal vertebra. *Distance*: 60" (152 cm.). Focal Spot: 2 mm. *Screen*: Standard speed. Milliamperes: 300. Exposure: .08 second (average). k.V.p: 48–55. Films: Standard speed. Tube angulation: 5°.

CHEST CONFIGURATION

TABLE 1: MEASUREMENTS MADE FROM CHEST X-RAY FILMS OF 150 EUROPEANS AND 150 AFRICANS

	European		*African*	
	Mean	*S.D.*	*Mean*	*S.D.*
B.D. of Chest ..	31·47	1·77	28·69	1·42
T.D. of Heart ..	12·41	1·14	12·87	·87
Vertical Diameter	23·53	1·60	21·85	1·40
Cardio-Pulmonary Ratio	·40	·031	·45	·030
'Pulmonary' Ratio	·75	·068	·76	·055

To obtain a true appreciation of the differences in the chest configuration of the two racial groups the following measurements were made, using graduated callipers adapted for the purpose:

1. The transverse diameter of the heart was obtained by measuring the greatest distance between the right and left cardiac borders (T.D.).
2. The broad diameter was obtained by measuring the distance across the widest diameter of the chest (B.D.).
3. The vertical diameter was obtained by measuring the distance from the inner aspect of the first rib to the highest point on the right diaphragm (V.D.).

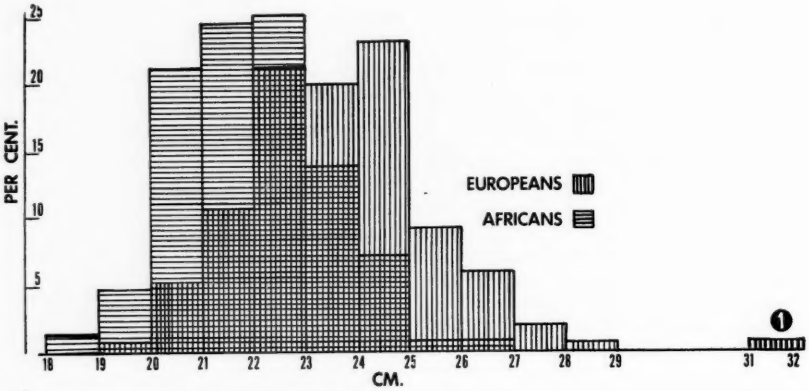
From these measurements 2 ratios were obtained:

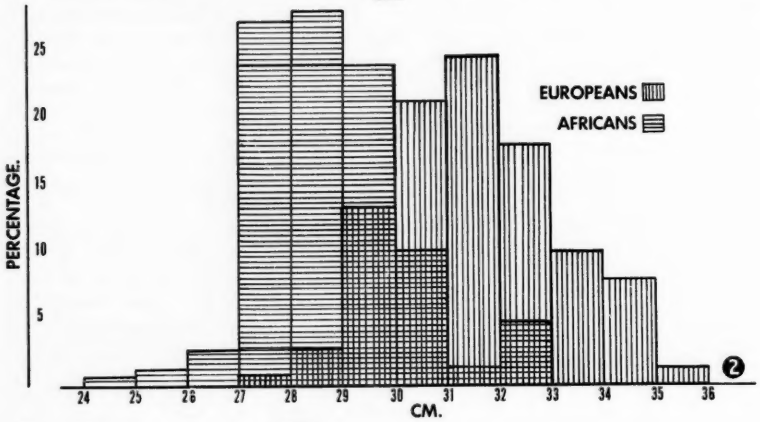
(*a*) The cardio-pulmonary ratio, being the ratio between the transverse diameter of the heart and the broad diameter of the chest; and
(*b*) The 'pulmonary' ratio, being the ratio between the vertical diameter and the broad diameter of the chest.

These measurements were made on the first 150 Africans and 150 Europeans who attended the Bureau for pre-employment (initial) examination from 1 January 1959. The average age of the Europeans was 30.1 years and of the Africans 28.3 years. The only criteria affecting the selection were:

(*a*) That all the films were in the same respiratory phase—the diaphragm being at or near the level of the 10th rib;
(*b*) That the chest was wholly contained on the film; and
(*c*) That there was no cardio-pulmonary disease.

These measurements were made at the main Bureau in Kitwe and are presented in Table 1 above and Figs. 1–3. From them it appears that the African has a significantly smaller broad diameter of the chest, and a smaller vertical diameter. The ratio of V.D.: B.D. in the African and the European is, however, virtually identical, and this is taken as evidence that the chest configuration of the two groups, as far as it can be ascertained from this ratio, is similar. This supports the original observation that, in fact, the African chest is merely a smaller version of that of the European. These measurements were repeated on routine chest films from 25 African recruits which had been rejected at wet readings because of the poor inspiratory effort made. A further film was obtained from each recruit in which an inspiratory effort was made such that in the majority of the resultant films the diaphragm was at the level of the 10th rib. The pulmonary ratios of the two groups were measured; in the series with an insufficient inspiratory effort the pulmonary ratio was 0.61 and in the group with an adequate inspiratory effort the mean pulmonary ratio was 0.71 with a similar standard deviation. The difference in the two pulmonary ratios was due to an appreciably greater increase in the vertical diameter as against a relatively small increase in the broad diameter of the chest in the group with





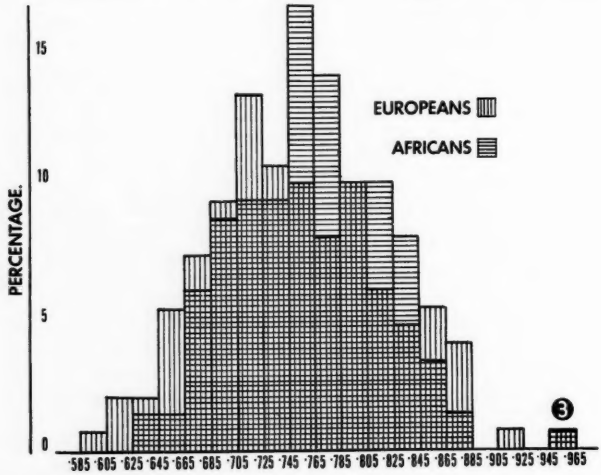


Fig. 1. Distribution of vertical diameters.
Fig. 2. Distribution of broad diameters.
Fig. 3. Distribution of pulmonary ratios.

an adequate inspiratory effort. This demonstrates measurably the effect of an inadequate inspiratory effort as a factor in the radiological appearance of a squat chest.

Measurement of the transverse diameter of the heart shows that the African has a slightly greater absolute measurement than the European and, because of the smaller broad diameter of the chest, has a significantly larger cardio-pulmonary ratio than the European. This is rather a surprising finding in view of the fact that the European heart is heavier than that of the African.

Hill and Kitwe, significance tests between the two Bureaux were not made, but from Table 2 the differences between them appear small. A comparison of the means of African and European measurements made at each Bureau show that the African is significantly smaller in these respects than the European.

The M.V.V. (Maximum Voluntary Ventilation) measurements were made on the same randomly chosen group of 183 European and 410 African miners on which physical measurements were made, using the method of Kennedy[1] (FEV .75 x 40). These measurements

PHYSICAL MEASUREMENTS

TABLE 2: PHYSICAL MEASUREMENTS OF A SAMPLE OF EUROPEANS AND AFRICANS FROM THE KITWE AND BROKEN HILL BUREAUX

	Kitwe				*Broken Hill*			
	African		*European*		*African*		*European*	
	Mean	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*	*Mean*	*S.D.*
Height (inches)	66	2·0	68·8	2·5	65·6	2·4	69·3	2·6
Weight (lb.)	130·7	12·5	162·8	24·1	131·4	13·2	165·0	26·5
Chest at Maximum Inspiration (inches)	35·2	1·4	38·4	2·6	33·7	1·4	38·4	2·6
Body S.A. (Sq. M.)	1·67	0·09	1·87	·15	1·66	·10	1·92	·16

Measurements of height, weight, diameter of the chest at maximum expansion and the body surface area were made on the same 150 Africans and 150 Europeans, whose chest configuration had been measured. Similar measurements were made at the Sub-Bureau, Broken Hill, on a random sample of that Bureau's mining population and refer to 183 Europeans and 410 Africans.

As we are unable to give any measure of observer differences existing between Broken

were done at the Broken Hill Bureau by one observer (G. F.). The results are presented in Table 3 and Fig. 4, and it will be seen that if no correction is made for size there are considerable differences in the M.V.V. value between the two groups. If, however, the M.V.V. is related to the body surface area, the differences are less pronounced, and the differences in the age group 35–45 are no longer significant. The tendency of the European to put on weight with age makes his performance in

MAXIMUM VOLUNTARY VENTILATION

TABLE 3: MEASUREMENT OF M.V.V. OF 183 EUROPEANS AND 410 AFRICANS

Age Mid-point of Group	*Number*		*M.V.V. Litres per Minute*				*M.V.V. Litres per Minute per Sq. M.*			
			African		*European*		*African*		*European*	
	Afr.	*Eur.*	*Mean*	*S.D.*	*Mean*	*S.D*	*Mean*	*S.D.*	*Mean*	*S.D.*
25	147	53	*105·4	15·3	133·8	17·4	*63·0	8·6	69·7	9·1
35	222	62	*103·2	12·2	121·4	14·3	61·9	6·9	63·7	7·5
45	124	47	*95·3	14·7	106·3	20·2	57·5	8·1	57·3	10·5

* Indicates a statistically significant difference.

relation to body surface area proportionately worse with advancing age. This tendency does not occur in the African. It may be also that smoking has some influence, in that the European is a considerably heavier cigarette smoker than the African, and there are significantly more non-smokers in the African population than in the European.

Fig. 4.

SUMMARY

1. The results are recorded of a comparative study of European and African recruits and miners in the mining industry of Northern Rhodesia.

2. No factors were found by which we could differentiate between the lung fields of the two racial groups.

3. The chest configuration, as measured by the ratio V.D.: B.D. is almost identical in the two racial groups.

4. The heart of the African as measured by the transverse diameter is slightly greater than that of the European and the cardio-pulmonary ratio is significantly larger.

5. The African has a significantly smaller and more compact physique than the European.

6. The M.V.V. of the African is significantly less than the European, but when expressed in relationship to square metre of body surface area the differences are less pronounced, and in the older age groups are no longer significant.

We are grateful to our colleagues at the Bureau and especially to K. Tiplady and E. Naylor, Radiographers.

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COMMON BACTERIA AND THEIR INCREASING DRUG RESISTANCE

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The problem of bacterial resistance to treatment seems to increase in parallel with the growing number of bactericidal agents appearing on the market.

This statement finds confirmation in the amount of literature dealing with staphylococcal resistance to treatment and it is the aim of this paper to reveal a possible similar trend in those organisms which are the most common originators of infection.

While the investigations were in progress an article dealing with the same problem was published.[1] As the tests in this laboratory also include the haemolytic streptococcus and cover the relationship of 4 bacteria to Sulphatriad, Furadantin and 10 antibiotics, it was decided to bring the results to the notice of the medical profession.

Records were made available by the central laboratory of the South African Institute for Medical Research for the years 1954 to 1958 and from the South Rand Hospital Laboratory of the South African Institute for Medical Research for the years 1958 and 1959.

The material examined was received from hospitals and independent medical practitioners and consisted of nasal, throat, vaginal and wound swabs as well as sputa, urines, stools and cerebrospinal fluids.

As it is well known that hospital strains tend to be more resistant than those found in private practice, false conclusions were avoided by pooling these results from different sources.

It is hoped that the results of the investigations will clearly indicate the drug which is most useful in the treatment of an infection caused by one of the organisms concerned and enable the practitioner who is pressed for time to make use of an agent proved to be the most effective at the present day.

Technique. The organisms which were isolated between the years 1954 and 1959 include staphylococci, haemolytic streptococci, coliform bacilli and the proteus group. Of

each bacterial type 1,629 strains were tested thus totalling a number of 6,516. These figures were obtained by selection of random samples.

The culture medium employed was blood agar and the plates were read after 16–20 hours' incubation.

The dried filter paper disc method was used and an organism considered sensitive only if the zone of inhibtion was at least 3 mm. beyond the edge of the disc.

The strength of the antibacterial agents per disc was:

For Sulphatriad—50 mcg.
For Penicillin—10 units.
For Streptomycin—100 mcg.
For Furadantin—100 mcg.
For Aureomycin, Chloromycetin, Terramycin, Erythromycin, Achromycin, Neomycin, Novobiocin and Kantrex—each 50 mcg.

RESULTS

The results obtained are presented in the following Tables and illustrated in Fig. 1.

Staphylococci. Only *Staphylococcus aureus* was examined and for the year 1959 all strains selected and investigated were coagulase positive (Table 1).

Hæmolytic Streptococci. As most streptococci were not grouped, nothing can be said about a possible increasing resistance of pathogenic strains (Table 2).

Coliform Bacilli. The investigations included the whole of the coliform-aerobacter group and were not limited only to *E. coli* (Table 3).

Proteus Group. Here too the various members of the proteus group were not investigated separately (Table 4).

DISCUSSION

The development of staphylococcal drug resistance during the last 6 years is striking. With the exception of Erythromycin and Chloromycetin, the staphylococcus shows a markedly decreasing sensitivity towards all agents already in use and tested in 1954. The effect of Sul-

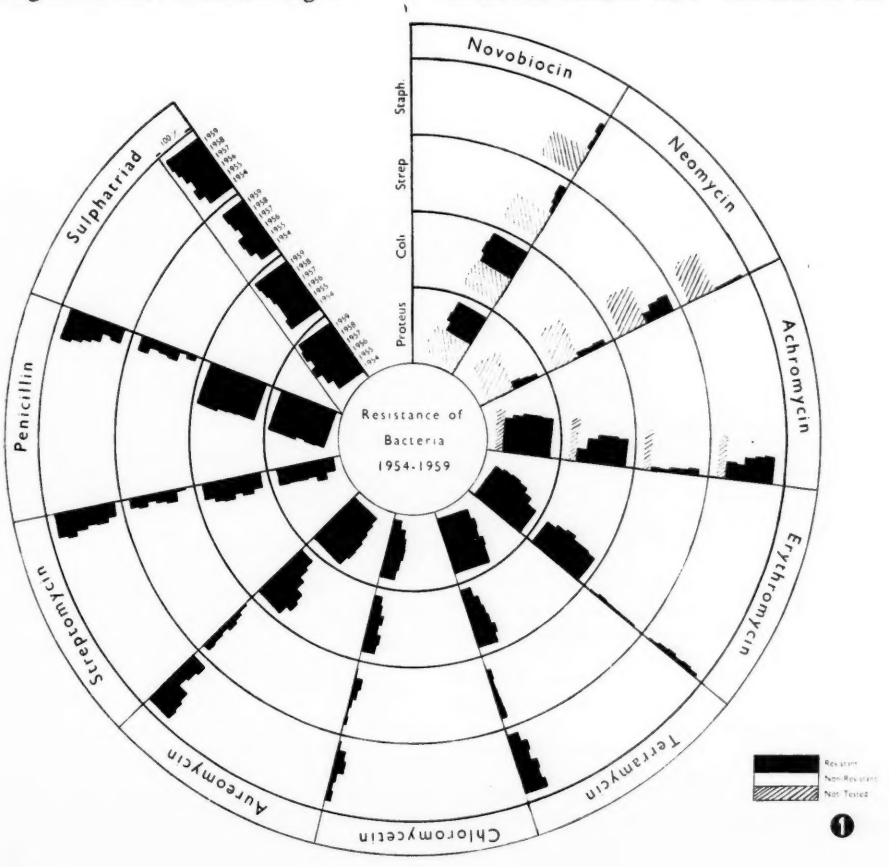

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TABLE 1. TABLE OF SENSITIVITY (%)

Year	No. of Strains	Sulpha-triad	Peni-cillin	Strepto-mycin	Aureo-mycin	Chloro-mycetin	Terra-mycin	Erythro-mycin	Achro-mycin	Neo-mycin	Novo-biocin	Kan-trex	Fura-dantin
1954	217	32	66	72	84	96	75	98					
1955	205	22	79	55	58	75	65	90	63				
1956	200	30	48	60	61	72	68	87	65				
1957	200	15	34	51	46	89	47	93	49	99	95		
1958	400	9	27	43	40	91	48	91	46	99	96		
1959	407	8	22	47	39	86	40	93	41	99	91	98	86

TABLE 2. TABLE OF SENSITIVITY (%)

Year	No. of Strains	Sulpha-triad	Peni-cillin	Strepto-mycin	Aureo-mycin	Chloro-mycetin	Terra-mycin	Erythro-mycin	Achro-mycin	Neo-mycin	Novo-biocin	Kan-trex	Fura-dantin
1954	217	57	88	98	99	100	100	99					
1955	205	41	98	70	90	80	94	93	97				
1956	200	39	77	73	81	84	97	96	97				
1957	200	52	81	83	85	98	93	99	91	77	93		
1958	400	48	82	75	84	99	92	99	90	61	87		
1959	407	47	70	77	82	96	86	98	84	57	84	53	100

TABLE 3. TABLE OF SENSITIVITY (%)

Year	No. of Strains	Sulpha-triad	Peni-cillin	Strepto-mycin	Aureo-mycin	Chloro-mycetin	Terra-mycin	Erythro-mycin	Achro-mycin	Neo-mycin	Novo-biocin	Kan-trex	Fura-dantin
1954	217	17	2	66	58	84	75	38					
1955	205	20	4	40	55	75	62	26	77				
1956	200	20	4	55	40	57	55	14	48				
1957	200	11	2	48	12	63	47	27	33	94	7		
1958	400	7	—	49	10	54	39	27	32	94	1		
1959	407	5	—	56	17	57	43	30	34	90	4	87	54

TABLE 4. TABLE OF SENSITIVITY (%)

Year	No. of Strains	Sulpha-triad	Peni-cillin	Strepto-mycin	Aureo-mycin	Chloro-mycetin	Terra-mycin	Erythro-mycin	Achro-mycin	Neo-mycin	Novo-biocin	Kan-trex	Fura-dantin
1954	217	22	5	65	19	73	25	10					
1955	205	7	2	50	13	55	13	7	18				
1956	200	2	5	57	6	50	15	4	10				
1957	200	8	—	57	2	49	7	7	6	82	28		
1958	400	4	—	58	1	52	8	12	6	91	18		
1959	407	6	—	57	6	55	8	35	8	92	20	78	38

phatriad is minute and penicillin presents a drop of 66%. Neomycin is excellent, but because of its toxicity it is used only for topical application. Of the more recent drugs Kantrex shows excellent results and Furadantin also appears satisfactory.

Drugs of choice: Kantrex, Erythromycin and Novobiocin.

The haemolytic streptococcus has remained more vulnerable to treatment, although a tendency for the development of resistance cannot be overlooked. Here, too, Chloromycetin and Erythromycin have not lost their efficiency and of the latest agents Furadantin presents to date a 100% effect.

Drugs of choice: Furadantin, Erythromycin and Chloromycetin.

Gram-negative bacilli do not differ with regard to increasing resistance from Gram-positive cocci. The coliform bacilli have become less sensitive to the action of all agents tested in 1954. Kantrex is the most useful antibiotic, with Chloromycetin and Streptomycin showing bacteriostatic action in a little more than 50% of tests. Neomycin too is very effective.

Drug of choice: Kantrex.

The tests for the proteus group yielded increasing resistance only in the case of Sulphatriad, Aureomycin, Terramycin and Chloromycetin. Neomycin again proved very efficient.

Drug of choice: Kantrex.

It must be concluded from the results obtained that Kantrex is at present the most powerful antibacterial agent. A wide range of activity is also shown by Chloromycetin while Erythromycin is of great value in the treatment of Gram-positive cocci.

Fig. 1 represents the bacterial resistance towards 10 antibiotics, Sulphatriad and Furadantin for the years 1954 to 1959.

Investigations were not carried out for those years indicated by partially shaded areas.

SUMMARY

The behaviour of staphylococci, streptococci, coliform bacilli and the proteus group towards Sulphatriad, Furadantin and 10 antibiotics was studied; 6,516 strains isolated between the years 1954 and 1959 were investigated.

A generalized trend towards increasing bacterial drug resistance is shown, particularly in the case of staphylococci. The agent of the widest antibacterial spectrum proved to be Kantrex, although it was shown to be bacteriostatic only in 53% of the haemolytic streptococci. Here again Erythromycin was effective in 98% and Furadantin in 100% of the strains examined.

The growth of staphylococci and haemolytic streptococci was equally inhibited by Chloromycetin and Novobiocin.

I should like to express my gratitude to Mrs. S. M. Farmer of my staff for carrying out the statistical investigations together with me and also in particular for the design of the diagram.

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THE POST-CHOLECYSTECTOMY SYNDROME

A SURGICAL PROCEDURE FOR ITS PREVENTION

ROLF SIMON-WEIDNER, M.D.*
Municipal Hospital, Esslingen N, West Germany

The number of gall bladder operations has generally increased because of the advanced knowledge of cholescystic and hepatic affections and also in view of the comparatively small surgical risks involved. With the increased number of operations, however, a high percentage of failures has been recorded, estimated in the international literature at 30%. This has led to the concept of the post-cholecystectomy syndrome. As far as the causes of these affections are of a surgical character, biliary drainage barriers within the deep bile ducts will invariably be identified. The principal feature is that of changes in the region of Oddi's sphincter (which may be of a functional nature or the result of paresis of the sphincter), vestigal concretions or tumours. Also stenosis along the common ducts or constrictions from other causes have been observed.

Intra-operative measurement of pressure and cholangiography have, without doubt, facilitated recognition of the multiple causes and, as a result, particular interest during the operation is focused on the bile ducts. Both methods, however, provide only an indirect picture of actual conditions. Cholangiography can hardly show minute concretions, often situated in pouches above the papilla, or changes of the inner walls of the ducts and (depending on the number of exposures made) merely reveals by chance a partial functioning of Oddi's sphincter. Measurement of pressure will simply indicate a functional disturbance, but it cannot demonstrate its cause. In fact when calculi are present in the common bile duct, pressure will frequently be found to be lower than normal. Radiocholangioscopy under pressure control with the image intensifier provides an excellent presentation of sphincteric functioning and the distribution of contrast media within the ducts. However, a precise diagnosis of the structure and contents of the ducts is not feasible in this way. Larger concretions can be identified by palpation in most cases, so that radiological examination is not necessary.

The necessary and increasing interest in the examination of the inner bile ducts has led in Germany to the resumption of the practice of endoscopy (Wildegans). In 1926, Georg Wolf designed an endoscope for the bile ducts for Antonucci who, in 1931, published an account of his experiences in *Poli-Clinica.* In the United States, McIver also described an endoscope for the hepatic duct in 1941, the optical system carrying the illumination being set at an angle of 60° to the sheath.

With recent developments in the field of optical techniques we succeeded, in 1956, in co-operation with Richard Wolf G.m.b.H. of Knittlingen, in designing a choledochoscope which not only permitted observation under simultaneous irrigation, but also instrumental intervention in the ducts under optical control,

* Director of Surgical Services.

similar to the position with an operating cystoscope. Easily interchangeable sleeves can be fitted to the distal end of the instrument so that ducts of normal width of 18 F. can be investigated. After removal of the gall bladder we introduce the instrument either through the cyst stump (if it is wide enough) or else perform a choledochotomy of 1 cm. length at a specific point. Then the ducts can easily be inspected towards the liver up to the main branches of the hepatic ducts. After some practice, examination succeeds in most cases downwards to Oddi's sphincter and sometimes even beyond. In this manner we have discovered concretions in innumerable cases in the hepatic ducts or in the sphincteric region which had eluded intra-operative cholangiography. Until now it has been almost impossible to detect such concretions which, due to their location, could not be removed. Now we are able to extract such calculi under optical control with a 'Zeiss sling' or forceps through the choledochoscope. In cases of atypical changes of the walls we obtain biopsy specimens through the choledoschoscope for histological examination and, since 1958, we have performed electrocaustic splitting of Oddi's sphincter with a special ring electrode from the hepatic duct under optical control, a process which merely takes a few seconds. Finally, suitable accessories have enabled us to take colour photographs of the endoscopic images during surgery.

We believe that endoscopic examination of the inner bile ducts which we have been practising since 1955, in conjunction with routine cholangiography and radioscopy, not only offers the advantage of a clear morphological picture but also that of a great advance in our therapeutic procedures to an extent hitherto impossible by surgical methods. In hospitals where cholangiography plus pressure measurement or radiocholangioscopy are not possible, the choledochoscope is an instrument which can well dispense with these costly and protracted examinations.

NOTES AND NEWS : BERIGTE

DISTAQUAINE V-K TABLETS 60 MG. STRENGTH

British Drug Houses (S. Africa) (Pty.) Ltd., P.O. Box 372, Johannesburg announce that Distaquaine V-K Tablets are now issued in 3 strengths:

60 mg., 125 mg. and 250 mg.

Packings: The 60 mg. strength is available in bottles of 30 and 200 and the 125 and 250 mg. strengths in cartons of 12, 100 and 500.

Prices are the same as for Distaquaine V.

* * *

INTERNATIONAL WAR—PROPHYLAXIS CONGRESS FOR PHYSICIANS

GRAND-HOTEL HUIS TER DUIN AT NOORDWIJK ON SEA
23–28 MAY 1960

Three Languages: *English, French, German*

Among the speakers and discussion-leaders are also prominent world-federalists, world-citizens and world-parliamentarians.

The following entertainments will be organized:

Excursions to the famous bulbfields, The Hague, The Peace Palace, Amsterdam and the wonderful canals, museums (old masters and modern painters), etc.

Closing banquet; Receptions.

Congress Organization:

Prof. M. Knap, 46 Schubertstraat at Amsterdam, Holland.

Also contact this address if you wish to deliver a paper.

MEDICAL COUNCIL: WARNING NOTICE

THE SOUTH AFRICAN MEDICAL AND DENTAL COUNCIL

TO ALL MEDICAL PRACTITIONERS REGISTERED IN THE UNION OF SOUTH AFRICA

The Registrar of the Medical Council has been instructed by the Council to direct the attention of all registered medical practitioners to the fact that the Council may take cognisance of the following acts or omissions with a view to disciplinary action under the provisions of Chapter IV of the Medical, Dental and Pharmacy Act, Act No. 13 of 1928, as amended:

(*a*) The acts or omissions prescribed in rule 25 of the rules regarding conduct of which the Council may take cognisance, viz.:

"1. The performance by medical practitioners except in emergency, of professional acts for the performance of which they are inadequately trained and/or insufficiently experienced.

2. The performance under improper conditions and surroundings of professional acts, except in emergency."

(*b*) The use of therapeutic measures (operative or non-operative) for conditions for which such measures cannot be reasonably justified.

In connexion with (*b*) above, the Council desires to direct the attention of practitioners to the fact that although this particular act is not specifically mentioned in the *Rules Regarding Conduct of which the Council may take Cognisance*, the Council may nevertheless take cognisance thereof in terms of the provisions of Section 47 of the Act, and if necessary take disciplinary action.

INTERNATIONAL SOCIETY OF CYBERNETIC MEDICINE

The International Society of Cybernetic Medicine, constituted in 1958 with the participation of 19 countries, held its first General Assembly in Naples, last November.

The Assembly elected as President: Prof. Aldo Masturzo of Naples University, Vice-President: Prof. Paul Nayrac of Lille University, Members of the Council: Professors N. Wiener, G. Asboe-Hansen, F. Nember, A. Gata, C. Coruzzi.

It has been decided to organize, in 1960 in Naples, an International Symposium on Cybernetic Medicine, with the participation of Prof. Norbert Wiener.

The Council has confirmed the office of Secretary-General in Naples (Italy), Via Roma 348.

* * *

TRIETHANOMELAMINE IN THE TREATMENT OF INOPERABLE LUNG CANCER

Triethanomelamine* has recently been shown (the *Lancet*, 23 January 1960) to have some definite effect in the treatment of inoperable lung cancer.

During the period July-November 1959, forty-three such patients were treated with Tretamine. Thirty patients showed subjective improvement and in 10 of these very marked to complete regression of the tumour occurred. In 4 cases the chest X-ray returned to normal or near normal and it is these 4 results that have stimulated this preliminary report in the *Lancet*.

Treatment of the 4 cases consisted of one or two large doses of TEM (Tretamine) given intravenously with a total dose of 15 to 30 mg. Within 3 days subjective improvement was evident and X-rays done routinely on the fifth day showed marked shrinkage of the tumour mass. This shrinkage continued over the next 3 weeks and at the end of a month the chest X-ray had returned to normal.

The fact that some success has apparently been achieved by this method is, of course, a vitally interesting development. However, the number of patients treated was comparatively limited and there has not yet been time for any long-term follow-up procedure. Also, it cannot be overlooked that 3 of the patients died a short time after the treatment due to haemorrhage from the tumour which had undergone necrosis, and it may well be that a number of surgeons will hesitate to use Tretamine, in view of these deaths, although some may take the view that, since these patients would almost certainly have died soon if the treatment had not been used, the risk was a justifiable one.

The first use of Tretamine in the control of clinical malignancy followed its release for research purposes by Imperial Chemical Industries Ltd., as the result of observations (Rose, Hendry, Walpole, 1950; Hendry, Homer, Rose, Walpole, 1951) on the inhibitory action of this and related compounds on the growth of experimental tumours. Other clinical reports (Karnofsky *et al.*, 1959) followed independent parallel discoveries made at the Sloan-Kettering Research Institute, New York.

Initial supplies of Tretamine 20 mg. ampoules will shortly be available in South Africa.

* Marketed by I.C.I. South Africa (Pharmaceuticals) Ltd. as Tretamine.

Preliminary Report by Jack, Gordon D., Doyle, L. and Palejwalla, M. M. (1960): Lancet, **1**, 206.

PREPARATIONS AND APPLIANCES

ZYNOCIN

British Drug Houses announce the introduction of *Zynocin*, a new antiseptic and sore throat lozenge. *Zynocin* is the first preparation of its type to incorporate the new antibiotic Xanthocillin, and the following advantages over existing antibiotic throat lozenges are claimed:

Xanthocillin is a broad-spectrum antibiotic which has proved remarkably effective by topical application against the gram-negative and gram-positive organisms responsible for most day-to-day infections of the mouth and throat. Micro-organisms do not appear to develop resistance to Xanthocillin, nor is there any evidence of cross-resistance to other antibiotics. Xanthocillin also inhibits secondary yeast and fungal activity and *Zynocin* Lozenges are therefore safe and suitable for prolonged use when necessary.

The benzocaine content ensures efficient local analgesia and swift and sustained relief from pain and irritation. Finally, because of their remakably pleasant taste, *Zynocin* Lozenges should be equally acceptable to children and adults.

Formula: Each *Zynocin* lozenge contains 1 mg. Xanthocillin and 5 mg. benzocaine in a lime-flavoured base.

Indications: Sore throats accompanying respiratory infections; tonsillitis and pharyngitis; stomatitis and gingivitis; dental extractions and minor surgery of the mouth where a local antibiotic is indicated.

Dosage: One or two lozenges to be dissolved slowly in the mouth every 2 hours. Treatment should continue for 2 or 3 days until the condition has been controlled.

Packing: Tube of 12 lozenges.

Zynocin Lozenges are manufactured by The Distillers Co. (Biochemicals) Ltd., England, and further information may be obtained from the sole importers, British Drug Houses (South Africa) (Pty.) Ltd., P.O. Box 372, Johannesburg.

SICCOLAM-B

British Drug Houses (South Africa) (Pty.) Ltd. announce the introduction of *Siccolam*-B, a preparation similar to their existing product *Siccolam*, but with milder dehydrating properties.

Composition: *Siccolam*-B contains titanium dioxide, zinc oxide, chlorphenesin and kaolin in a fat free base. The percentage of the active ingredients is however smaller for *Siccolam*-B than for *Siccolam*.

Action: Rapidly absorbs serum exudates and acts also as a mechanical protective and a barrier to light.

Indications: Exudative skin lesions, e.g. exudative dermatitis and contact dermatitis; varicose eczema, seborrhoeic and infantile eczema; intertrigo, photosensitivity dermatitis and bed sores.

Generally, *Siccolam* should be employed in the acute stages of these conditions but *Siccolam*-B will be found most useful after the severe exudatory phase and it may be preferred from the onset in those conditions in which the inflammatory exudate is not too pronounced. *Siccolam*-B spreads easily over the affected area and is suitable, when necessary, for prolonged use.

Packing: Tube of 40 grammes.

DISTAQUAINE V-K SUSPENSION

British Drug Houses announce the introduction of *Distaquaine* V-K Suspension. This is the latest advance in oral penicillin therapy, presenting for the first time potassium penicillin V as a *ready-prepared* suspension.

Potassium penicillin V is already widely prescribed in the form of *Distaquaine* V-K tablets. Now the convenient ready-prepared suspension provides an alternative which will be appreciated by young children and those who find difficulty in swallowing tablets.

Indications: All infections due to penicillin-sensitive organisms, except when oral therapy is unacceptable (e.g. due to intractable vomiting). *Distaquaine* V-K Suspension may be successfully used even in many conditions formerly reserved for parenteral therapy.

Dosage: Adults 125 mg. to 250 mg. 4-hourly depending on the severity of the condition and the response obtained.

Children (12 years and under): 60 mg. to 125 mg., 4-hourly.

For optimum response the preparation should be taken half an hour before meals (or at least 3 hours after meals).

Presentation: *Distaquaine* V-K Suspension is smooth in consistency, pleasantly flavoured and available in bottles of 60 ml. containing 125 mg. of penicillin V (as potassium salt) in each 5 ml. dose.

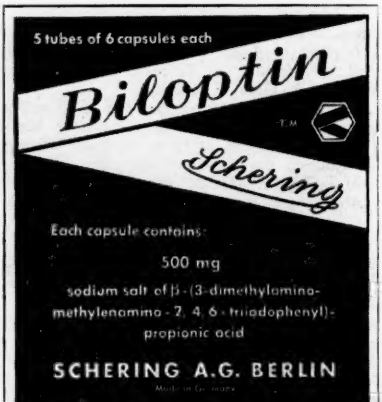
Distaquaine V-K Suspension is manufactured by The Distillers Company (Biochemicals) Ltd., London, and further information on the product may be obtained from the sole importers in the Union and South West Africa, British Drug Houses (South Africa) (Pty.) Ltd., P.O. Box 372, Johannesburg.

BILOPTIN

Schering A.G. Berlin offers an optimal oral radiological diagnosis of the biliary system with *Biloptin*, the sodium salt of β-(3-dimethylamino-methylen-amino-2,4,6,triiodophenyl)-propionic acid.

After oral administration, *Biloptin* is rapidly and completely absorbed. Three to four hours after intake, radiological examination often demonstrates only traces or none at all in the intestine, while at the same time the gall bladder is beginning to fill. The concentration in the bile is so high that it is not uncommon to find the bile ducts also visualized at this time. Side effects, even of a trivial nature, are extraordinarily rare.

Filling of the gall bladder is optimal about 10 hours after intake. Radiographs are exposed on the next morning in the usual manner. But because of the rapid absorption and excretion of *Biloptin*,



visualization of the gall bladder is already adequate for diagnostic purposes within 3-5 hours after intake, especially if the double dose is used. The possibility of performing rapid cholecystography may be valuable in certain cases.

The agent of choice for visualization of the bile ducts is *Biligrafin*. If, however, it is desirable to avoid the intravenous route for any reason, the bile ducts can be visualized with *Biloptin* orally also.

A packing of *Biloptin* contains 6 capsules, each of 500 mg. of active agent, equivalent to 3 g.

Sole Agents: Berlimed (Pty.) Ltd., P.O. Box 10259, Johannesburg.

PENITRIAD GRANULES

Maybaker (S.A.) (Pty.) Ltd., announce the introduction of a granule presentation of *Penitriad* for the preparation of a 2 fl. oz. flavoured suspension. One teaspoonful of the suspension is equivalent to one tablet of *Penitriad* which contains potassium penicillin V equivalent to 60 mg. of the free acid, sulphadimidine 167 mg., sulphadiazine 167 mg. and sulphathiazole 167 mg.

Penitriad is indicated for the treatment of infections due to penicillin and sulphonamide-sensitive organisms, and in particular to infections of limited sensitivity to these agents since the activity of the combination is likely to be appreciably greater than that of either penicillin or a sulphonamide alone.

For adults the dosage is 2 teaspoonfuls of suspension or 2 tablets initially followed by 1 or 2 teaspoonfuls of suspension or 1 or 2 tablets at 4- or 6-hourly intervals.

For children one half the adult dosage is advisable and for infants about one quarter the adult dosage is suggested. However, these doses may be increased at the discretion of the physician.

REVIEWS OF BOOKS

RENAL DISEASE

Nierenkrankheiten: Physiologie Pathophysiologie, Untersuchungsmethoden Klinik und Therapie. By Hans Sarre. 1959. 2nd ed. (Pp. 546+Index. 134 Illustrations. DM 59.–). Stuttgart: Georg Thieme Verlag.

Only 18 months elapsed between the publication of the first and the second edition, indicating the need for and interest in a comprehensive review of kidney diseases.

Divided into 5 sections (*Physiology, Methods of Examination, Clinical Features* and *Pathogenesis* of the chief syndromes, *Special Clinical Picture of Kidney Diseases,* and *General Therapy*), it certainly gives full cover to renal disorders from childhood to old age. The review of physiology as a basis leading to its application in examination and in the presentation of the clinical picture is most valuable. The various renal syndromes, common and rare, receive adequate attention. The bedside picture of renal disorders is a most scholarly study by this former pupil of Volhard. Therapy covers a variety of factors, including the artificial kidney.

The value of the book is greatly enhanced by the easily surveyable presentation, well broken down into subsections and headed paragraphs with numerous diagrams and Tables to facilitate finding the essential information. A book worthy of the serious student, it is also a handy reference for the general practitioner with a puzzling point or in search of general guidance.

It is warmly recommended as one of the best monographs of kidney diseases presently available.

ARTIFICIAL FEEDING

The Artificial Feeding of Normal Infants. By William Emdin, M.D., D.P.H., Ph.D., B.A. (1959. Pp. 102 + Index. With 3 Figs. 16s.). Cape Town: Howard Timmins.

This rather useful little book fills a gap in information about artificial feeding, especially for general practitioners and medical students in South Africa. It is a critical appraisal of many of the products available in this country, coupled with a generally sound approach to feeding.

However, there are some points which might be criticized in the light of modern knowledge in a book entirely devoted to feeding. The author feels that the higher protein and electrolyte content of cow's milk, compared to human milk, is not only harmless but probably advantageous in promoting growth and general health. It should be pointed out that there is considerable evidence that these high levels may be harmful to the small infant with immature renal mechanisms with resultant accumulation of urea and other products; hence the rationale of dilution with water, especially in tropical and subtropical countries.

The author is convinced that overfeeding can occur and is particularly common with the South African Bantu. He states that schedule feeding would prevent this and therefore is to be recommended to these people. It is doubtful that this is a viewpoint shared by many practitioners working with Bantu mothers and babies. In any case, it may well substitute a series of psychological disturbances for the very uncertain disadvantages of overfeeding.

In spite of these few criticisms, the book on the whole is sound, easy to read and has much useful practical detail.

FOOD-BORNE INFECTIONS

European Technical Conference on Food-Borne Infections and Intoxications: Report. World Health Organization: Technical Report Series, 1959, No. 184. 18 pages. 1s. 9d. Pretoria: Van Schaik's Bookstore (Pty.) Ltd., P.O. Box 724.

Centralization of food production, and distribution and consumption on a mass scale involve an increased risk of spreading food-borne disease. It is essential, therefore, that measures for the control and prevention of such diseases should be strengthened, not merely in each individual country but also at the international level, since foods are being exported and imported on an ever-mounting scale, and tourist travel is continually increasing. If such measures are to be effective, they must be based in the first place on proper notification of cases of food-borne disease in each country and on the collation at the international level of the reports published by the public health administrations. In addition, thorough epidemiological surveys are required. In this report of the European Technical Conference on Food-Borne Infections and Intoxications the various control measures designed to promote the production of pure and safe food are reviewed. The conference also drew up a series of recommendations on what the physician should do when faced with a case of food-borne disease, on what action should be taken by the public health services and laboratories, and on national and international measures for the control and prevention of such diseases.

THERAPEUTIC RADIOLOGY

Therapeutic Radiology: Rationale, Technique, Results. By William T. Moss, M.D. (1959. Pp. 393 + Index. With 146 Figs. 106s. 3d.). St. Louis: C. V. Mosby Company.

Therapeutic radiology, like diagnostic radiology, has become a vast subject. For this reason books which have appeared in Great Britain on radiotherapy since the war, have been the result of the combined efforts of groups of authors. In the *British Practice in Radiotherapy*,[1] for instance, under the editorship of Sir Ernest Rock Carling, Profs. B. W. Windeyer and D. W. Smithers, which appeared in 1955, not only were the different chapters on radiotherapy contributed by radiotherapists who had had particular experience in treating the cancers discussed in each chapter, but one or more clinicians contributed to each chapter. There was thus a balanced view on the therapy of the various organs or regions by radiation, surgery and chemotherapy as applied to that particular form of cancer. Physicists, radiobiologists and even radiographers contributed so that the subject could be presented from the various aspects of radio-therapeutics.

Even that master cancer surgeon, Sir Stanford Cade,[2] in spite of his vast experience of the use of radium in cancer, had several collaborators writing special chapters when he wrote his book on *Malignant Disease and its Treatment by Radium* (2nd Edition, July 1948).

Ralston Patterson,[3] in spite of his very large experience at Manchester, when he published *Treat-*

ment of Malignant Disease by Radium and X-rays in 1948, called in several collaborators, and it must be recalled that at that stage very little had been done with supervoltage X-rays. The cobalt bomb was non-existent and radioactive isotope therapy was in its infancy. Even a smaller book on therapeutic radiology which appeared in the United States in 1950 and which was written not for the specialist but for the medical student and the practitioner in the general field of radiology, was the joint effort of a pioneer radiologist, Holmes,[4] and a senior radiologist at the Massachusetts General Hospital, Dr. Schultz. Any one radiotherapist, therefore, attempting to write a book single-handed faces an impossible task if the book is to be comprehensive and cover the field of radiotherapy adequately.

There are 20 chapters in this book, all written by the author and covered in 392 pages. It is not quite clear for whom the book is intended. It would appear to have been written for the trainee in radiology, as the trainee is mentioned several times. The author states he has assumed that the reader of the book has a knowledge of radiological physics. It is doubtful whether the junior trainee has sufficient knowledge of physics. No chapters on physics have been included and radio-isotopes have been left out altogether. The relative merits of super-voltage therapy have not been adequately discussed, either in the separate chapter or when the individual conditions are discussed. Technique, too, is inadequately described. The trainee or radiological student, or surgeon for that matter, would not get sufficient detail on how to do a radium implant of a tongue and how to work out the dosage. The trainee would not get sufficient detail on how to treat ringworm of the scalp. The surgeon would not be able to find a discussion on carcinoma of the thyroid when radio-iodine is indicated or at what stage radiotherapy may be or should be employed, because the treatment of carcinoma of the thyroid is not discussed at all.

Radiotherapists who ought to know the value of bilateral adrenalectomy and hypophysectomy and the relative merits will find this scarcely mentioned in the treatment of carcinoma of the breast. The radiotherapist wishing to treat the patient with an yttrium implant into the pituitary will not only not find any detailed instruction, but he will also not even find the subject mentioned.

Techniques are generally not adequately described. The technique of an interstitial implant in the bladder with radioactive tantalum is dismissed in one line. The apparatus which is necessary is not mentioned.

Wedge filters are mentioned but not discussed adequately. The technique employing wedge filters in super-voltage therapy is not discussed, and Patterson's[5] enthusiasm for wedge-filter techniques in super-voltage therapy is not mentioned.

Even the chapter on radiotherapy in skin conditions is inadequate. Radiation of skin cancer is not fully discussed and radiotherapy in benign diseases of the skin is limited to one page. The claims by dermatologists for Grentz-ray therapy are not even mentioned. It is true that the author, like the reviewer, may not believe in it. Nevertheless, as some dermatologists do practice it, there should have been some discussion on the subject and at least a reference to the excellent articles on the subject of Grentz-ray therapy which have appeared in the United States showing its very limited value, by Saintsbury.[6] The way the cases of skin carcinoma were selected either for radiotherapy or for surgery does not permit a comparison of the results. Lesions of the cheek, cervical region, dorsum of the hand and scalp were, for instance, usually excised. The mere fact that the lesion is on the cheek is no indication for its excision rather than for radiotherapy. The recurrence rate for basal cell carcinoma treated with radiation (60 out of 821 patients within 3 years) appears unusually high. His technique for treating skin conditions appears to be 110 K.V. filtered with one quarter millimetre Cu. The actual dose varied with the site and the size of the lesion. For 2 cm. fields he advocates 3,600 r in 10 days. This is on the low side and may account for the higher than average percentage of recurrences.

The possibility of using cobalt or super-voltage therapy for lesions which have invaded bone from the skin is not mentioned. Excellent results in several such cases have been reported from Bristol by Tudway.[7]

In Chapter 3 on the oral cavity and the pharynx, there is no reference to the use of radon or gold seeds in elderly people with extensive growths of the tongue.

In Chapter 4 on the orbit, the radioactive Strontium applicator is inadequately described and the risk of scratching the cornea with the older type of applicator is not mentioned.

In fact, throughout the book there are not sufficient details of technique nor are there sufficient illustrations.

The author is at variance in his opinion of the value of super-voltage radiation in endo-laryngeal carcinoma with current opinion in Great Britain. He states: 'We are not convinced that super-voltage radiations are particularly advantageous in the treatment of laryngeal lesions. The bone-sparing characteristics of super-voltage radiation does not significantly spare the laryngeal cartilage and in the superficial location of these lesions there is an adequate tissue dose using 200 K.V. in simple ports.'

On first principles there would be some logic in this reasoning, but all those who have used super-voltage therapy in the treatment of carcinoma of the larynx in Great Britain have stressed the superiority of super-voltage or cobalt therapy in minimizing the discomfort of the reactions and minimizing the risk of cartilage necrosis.

The advantage of super-voltage therapy in treating carcinomas of the ethmoids with a single straight on field between the eyes, because the clear cut beam will avoid the orbits, are not indicated. (Mount Vernon Hospital technique).[8]

In the Chapter on *Carcinoma of the Ovary* he states: 'The routine prophylactic use of Au^{198} after surgery is to be condemned,' and suggests it is only used if a malignant cyst was ruptured. On the other hand, J. H. Muller,[9] of Switzerland, reported at the Atomic Energy Conference in 1958 as follows:

'A report is presented on the first 5-years' results of routine intraperitoneal (and intrapleural) administration of colloidal radioactive gold (Au^{198}) for the treatment of ovarian cancer in an unselected group of 51 patients. These results indicate that such isotope administration is a true progress in this field of cancer therapy, since it does at least double the salvage rate of the ovarian cancer patients with surgically resectable primaries.'

It may be stated also here that Muller in his Clinic has devised a 2 X-ray tube technique for the treatment of carcinoma of the ovary, one tube being below the patient and the other one above the patient. The upper tube is tilted proximally.

There are, however, some good features in the book as Dr. Ackerman, the well-known cancer expert, who writes the *Foreword,* points out. The

author discusses the effect of radiation on the normal tissues as a preliminary to discussing the radiation therapy of cancers of the individual organs. The book is also easy to read. One gains the impression that this book was written by the author as a series of lectures for his trainees. This may account for merely the references to wedge-filters and so on, without the detail. The book should, therefore, prove useful for a rapid means of revision of the subject for students before examinations. It should be useful for the general surgeon who does not require a very deep study of radiation. The book should also be useful for the student of diagnostic radiology who ought to know something about radiation therapy without being expected to go into great detail.

M. Weinbren.

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CORRESPONDENCE

THE PHYSICIAN'S PRAYER

To the Editor: In your issue of 16 January 1960, there is a poem entitled *The Physician's Prayer*, copyright reserved by its author, Arnold Rieck, and based on a piece in prose stated to be anonymous.

Such a deposition is an impertinence, for the original, on which the poem is based, is by the late Dr. W. O. Rubidge of Springs, and appeared in the *South African Medical Journal* of 10 July 1954, **28**, 598. Moreover, the original lofty prose is far superior to the doggerel in this poem.

S. Levin, M.B., M.R.C.P.E., D.C.H.

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THE MEDICAL SERVICES PLAN: A PROGRESS REPORT

To the Editor: Medical Services Plan accepted applications for Group Membership from the General Public from 1 July 1959 and thereby launched the first comprehensive, profession-sponsored, prepaid Medical Care Scheme on the African continent. After 6 months' operation this report is being sent to Participating Doctors because of numerous requests about the progress of the Plan. It is hoped that the data contained herein will bring each Participating Doctor up to date on the present and anticipated future developments of the Plan.

A. *Fiscal*: To give the Plan the initial funds necessary for establishing the scheme, it was decided to ask each Participating Doctor for a Participation Loan of £10, repayable upon the resignation or death of the doctor, or when the financial stability of the Plan warrants it. Originally, Participating Doctor Membership was limited to the area of the Southern Transvaal Branch of the Medical Association of South Africa, but was extended to cover the doctors in the area of the East Rand Branch at the request of that Branch. From these areas 764 doctors indicated their intention of joining Medical Services Plan as Participating Doctors, of whom 691 have submitted their Participation Loan. There are 73 still outstanding.

An amount of £1,956 12s. 7d. has been used up to September 1959 to cover costs of establishing the Plan. Included in this amount is capital expenditure for printing and salaries of the staff from February to September 1959. From October, to date, the Plan has not used the Participating Doctors' Loan Account, but has operated off the Subscribers' Account and the authorized administrative deductions from approved doctors' accounts. From the short experience to date, barring a calamity (for example an epidemic), it is hoped that a portion of the Participating Doctors' Loans will be repaid after a year's operation.

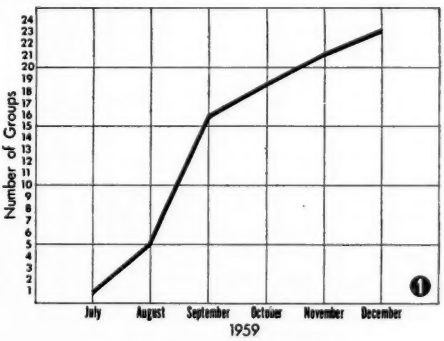

Fig. 1. Growth of Groups.

B. *Membership*: Figs. 1 and 2 illustrate the excellent growth of the Plan since July and Table 1 is a list of participating groups. Fig. 1 shows the rate of group growth. Fig. 2 shows the growth of subscribers and persons covered by the Plan.

Since one of the Insurance Companies has suspended taking further groups, and another has reduced the indemnity cover of its policy holders to approximate the Preferential Tariff for approved Medical Aid Societies, the Plan has been inundated by queries from Groups covered by various Insurance Schemes and others about the Plan's requirements for membership.

Early in the new year the membership of the Plan can be expected to double with regards to the Subscriber Members and to triple as regards the number of people covered.

Although the actual area of operation of the Plan is that of the Southern Transvaal and East Rand Branches of the Medical Association of South Africa, to accommodate National Groups and to obviate the injustice to a Subscriber of treating as a Non-Participating Doctor any registered medical practitioner rendering service to a Subscribing Member of the Plan while on business or vacation outside of the area of operation, the Board of Directors passed the following Rule (subsequently approved

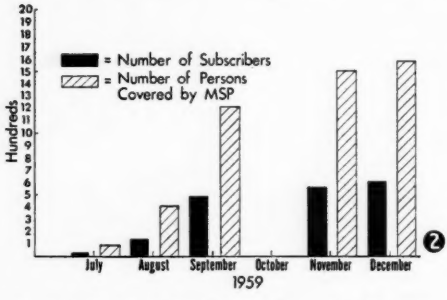

Fig. 2. Subscribers and Persons Covered by the Plan.

Subscribers in the Plan to date: 621
Number of people covered: 1,628

by the Branch Council of the Southern Transvaal Branch and the Federal Council of the Medical Association of South Africa). The necessity for this provision will fall away as soon as the Plan is officially extended on a Union-wide basis, at which time all private practitioners in the country will have the opportunity of enrolling as Participating Doctors:

TABLE 1: LIST OF GROUPS AS OF DECEMBER 1959

Name	*Group No.*
Medical Services Plan	1
Keatings Pharmaceuticals Ltd.	2
Denver Machinery Co. (Pty.) Ltd.	3
Westdene Products (Pty.) Ltd.	4
Cooper Brothers & Co.	5
Neon Fluorescent (S.A.) (Pty.) Ltd.	6
King David School	7
Alloy Industries	8
S.A. Blood Transfusion Service	9
National Cash Register Co. (S.A.) (Pty.) Ltd.	10
South Wales Electric (Pty.) Ltd.	11
Miodownik & Co. (Pty.) Ltd.	12
South African Milling Co. Ltd.	13
Plastic & Metal Industries (Pty.) Ltd.	14
Cyril Egnal & Co.	15
Norman Adam (Pty.) Ltd.	16
Joseph Lucas (Pty.) Ltd.	17
Bowman, Gilfillan & Blacklock	18
The Dove Insurance Corporation Ltd.	19
Direct Payments	20
E. R. Pollak Ltd.	21
Lawson Holdings (Pty.) Ltd.	22
Universal Manufacturing Engineers	23

Rule I. Where a Subscriber to the Plan or his dependant is obliged to seek medical services in an area where the Plan does not yet operate, the Plan will treat the medical practitioner concerned as a Participating Doctor for the purposes of payment, provided that the medical practitioner shall have agreed with the subscriber to accept payment from the Plan as a Participating Doctor before rendering services.

In answer to numerous requests from members of the profession for personal coverage by the Plan, the Board of Directors also passed the following Rule which, similarly, has received the Branch Council's and Federal Council's approval:

Rule II. Subscribing Membership to the Medical Services Plan is open to any registered medical practitioner. Upon acceptance of an application for membership, the medical practitioner and his dependants shall be entitled to all benefits of the Plan in accordance with the Terms and Conditions set out in the Subscriber's Contract, provided that payment shall either be made annually in advance or otherwise secured to the satisfaction of the Board of Directors of Medical Services Plan.

It is considered that Stop Order facilities will be the most convenient method of handling Doctors desiring Subscriber Status. The Plan's Stop Order Forms are available on request.

C. *Experience*: The experience gained during the 6 months of operation indicates that the type of Subscriber in the Plan is one who has joined primarily to protect himself and his family from the hardships of high costs of major medical, surgical and hospital services. There has been no immediate run upon the use of services, as was feared by some during the Plan's organizational stage, because of the fact that the Plan offers full comprehensive coverage. The organizers were guided by American and Canadian experience, which advised them that no such run resulted over there.

On the part of the Participating Doctors, the Vetting Committee has had to query very few accounts.

D. *Schedule of Fees*: At the Inaugural General Meeting of the Plan it was decided that the Plan should operate on a Schedule of Fees equal to the Medical Aid Tariff plus 50% or normal private practice fees, whichever were less. During the month of November, the Branch Council of the Southern Transvaal Branch of the Medical Association of South Africa instructed the Plan to adopt the Schedule of Fees of Medical Aid Tariff plus 40% until such time as the Association could provide a detailed Schedule of Fees to be applied by the Plan.

It should be understood by Participating Doctors that this Schedule of Fees represents the maximum that the Plan will pay for services rendered. If, in treating a patient, you would have ordinarily charged a lesser fee, the Plan expects that your account will be for the lesser amount.

To expedite payment of accounts, Participating Doctors should instruct their receptionists to render all accounts of Subscribers directly to the Plan, being sure that the Subscriber's Membership Number, as well as the Subscriber's name and address, appears on the account.

All Groups have been advised that their Subscribers must present their Membership Card on seeking services, or give the Doctor their Membership Number.

P. J. PARVUS, *General Manager.*

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